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Sport activity in children aged 5 to 13 years in the Swiss Household Panel 2007 – levels and relationship with parents' behaviour

Abstract

Data on physical activity in children is scarce in Switzerland, though a better understanding of its levels and changes is of primary concern for public health. Parent-proxy data from the Swiss Household Panel survey 2007 were used to describe participation of 5 to 13 year old children in sport clubs or similar associations. Almost three quarters of boys and girls were members of such organisations, with lower participation under about 8 years of age. The most popular sports practiced among boys were football and among girls dance and gymnastics. The parents' socioeconomic status, physical activity and sports club membership showed an association with the child's behaviour. Further exploration of these relationships may provide a better understanding of possibilities for intervention.

Résumé

En Suisse, les données sur l'activité physique des enfants sont rares, malgré l'importance que représente la connaissance des niveaux et changements de l'activité physique pour la santé publique. Les données du Panel suisse de ménages 2007 ont été utilisées ici pour décrire la participation d'enfants, âgés entre 5 et 13 ans, dans des clubs et autres associations sportives. Près de trois quarts des garçons et filles sont membres d'associations, proportion cependant plus basse pour les enfants en dessous de 8 ans. Parmi les garçons, le football est le sport le plus populaire, alors que pour les filles ce sont la danse et la gymnastique. Le niveau social, l'activité physique des parents et leur propre appartenance à un club sportif se révèlent associées à l'activité de leurs enfants. Des analyses plus poussées des relations entre les comportements des parents et ceux de leurs enfants sont susceptibles de fournir une meilleure compréhension des possibilités d'interventions.

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Introduction

As in many other countries, also in Switzerland there is a growing interest in physical activity behaviour of children while nationally representative data is scarce (Bundesamt für Gesundheit, 2008). In general, physical activity levels in European youth tend to decrease with age, and boys of all ages are more physically active than girls, with more pronounced differences seen for vigorous than for moderate activities (Armstrong and Welsman, 2006). While the majority of younger children are reported to achieve physical activity levels of one hour per day or more, fewer older children do so, especially older girls (Riddoch et al., 2004).

Parents' physical activity behaviour may be important for their children's activities as well, however studies show somewhat contradictory results (Sallis et al., 2000). A recent study of pre-school children using physical activity measurement by parent-proxy questionnaire and accelerometry indicated that parental and particularly the father's activity correlated weakly with the child's activity at age 3 and 4 years (Taylor et al., 2009). A study in French 12 year olds showed that parents' sport involvement was associated with children's participation in structured physical activity outside school (Wagner et al., 2004). In a study of 59 Australian children aged 6 to 10 years, higher family socioeconomic status was found to be a significant predictor of children's physical activity levels (Ziviani et al., 2008).

The data of the Swiss Household Panel offer a unique opportunity to study physical activity levels of different household mem-

bers, associations between parents' and children's physical activity behaviour and potential household-level predictors of children's physical activity. The aim of the present study is to describe sport club membership and sport training activities in children aged 5 to 13 years, and to relate children's physical activity behaviour to that of their reporting parent.

Methods

The Swiss Household Panel (www.swisspanel.ch, Zimmermann and Tillmann 2004) is a longitudinal nationwide study collecting data on households and individuals every year since 1999 using computer-assisted telephone interviewing techniques. The principle aim of the panel is to monitor social change and changing living conditions in the population of Switzerland. The survey covers a broad range of social science topics. Interviews are conducted in German, French and Italian. A few survey questions address physical activity.

All household members aged 14 years and older of sampled households are interviewed annually.

In addition, proxy data are obtained from a household reference person for household members unable to answer themselves and for children below 14 years of age. In 2007, for children of 5 to 13 years, proxy questions were included on children's physical activity as globally rated by parents (data presented elsewhere, Zimmer-

mann-Sloutskis and Zimmermann, 2008), on participation in sport clubs or in similar associations for practicing physical activity (e.g. martial art, dancing), on children's main sport discipline and on training hours spent in sport. The reporting parent's physical activity behaviour was assessed using one question on engaging in any physical activity of at least moderate intensity (those answering "yes" were classified as physically active) and by asking about passive or active membership in a sports or leisure association. Socio-economic status was included based on the age- and size-adjusted household income and the highest level of education achieved by the reporting parent.

Valid data were obtained for 1,248 children between 5 and 13 years living in 781 households (646 boys and 602 girls). In 72.8% of the cases, the proxy questions were answered by the child's mother, in 26.6% by the father, and in 0.6% by an older sibling (data excluded from these analyses).

The Chi square test was used to test for differences between proportions, and the t-test for comparing training hours between groups.

Results

Children's participation in sport clubs

The majority of the children participated in a sport club or similar association with no difference between boys and girls over all age groups (boys: 71.7%, $n=644$; girls: 72.4%, $n=596$, $p=.417$), in 5 to 7 year olds (boys: 55.5%; $n=181$; girls: 63.1%; $n=158$; $p=0.73$), in 8 to 10 year olds (boys: 77.4%; $n=236$; girls: 77.6%; $n=211$; $p=0.99$) and in 11 to 13 year olds (boys: 78.9%; $n=229$; girls: 74.1%; $n=233$; $p=0.83$). Membership was lower in the 5 to 7 year old children (59.0%) compared to the 8 to 10 year old (77.5%; $p=0.011$), whereas no difference was seen from the middle to the oldest age group (76.5%, $p=0.99$).

For children active in sport clubs and similar associations ($n=899$), the parents were asked about their child's sport discipline or – in case of several activities – about the sport their child dedicated most of its training time to. Football, gymnastics, dance, tennis and swimming were the sports named most frequently. Over 36% of boys were playing football, while over half of the girls practiced some sort of gymnastics or dance. *Table 1* shows the top 5 sport disciplines for the different age groups in boys and girls.

Children active in sport clubs and similar associations spent on average 3.4 hours per week in training sessions, 27.5% trained four hours per week or more. There was a significant difference between boys (3.4 hours) and girls (2.7 hours, $p=0.000$). 33.7% of the boys and 21.1% of the girls trained four hours or more per week ($p=0.000$).

The hours spent training were similar for boys and girls of 5 to 7 years (1.8 h/week; 1.9 h/week; $p=0.463$), but they differed in 8 to 10 year olds (boys: 3.3 h/week; girls: 2.5 h/week; $p=0.000$) and in 11 to 13 year olds (boys: 4.2 h/week; girls: 3.3 h/week; $p=0.012$).

Association between reporting parent's and child's behaviour

The majority of the parents (74.7%) providing the proxydata for their child indicated to be themselves physically active; 43.9% reported to be either an active or a passive (i.e. currently not active) member in a sport club or leisure association; the proportion was higher for fathers (48.6%) than for mothers (42.1%) ($p=0.04$).

The proportion of children who were active members in a sport club was 74.6% if their responding parent was active and 65.2% if their parent was inactive ($n=1209$; $p=0.002$). The same relationship with active membership was found for boys (if parent active: 73.9%; if parent inactive: 64.5%; $n=627$; $p=0.024$) and for girls (if parent active: 75.2%; if parent inactive: 66.0%; $n=582$; $p=0.029$).

The proportion of children who were active members in a sport club was 83.6% if their responding parent was a member as well and 63.4% if not ($n=1207$; $p=0.000$). The same relationship with active membership was found for boys (if parent member 84.7%; if parent non-member: 61.2%; $n=626$; $p=0.000$) and for girls

Boys (n=463)					
5–7 years		8–10 years		11–13 years	
Football	35.4%	Football	37.4%	Football	36.3%
Gymnastics	23.2%	Gymnastics	9.9%	Tennis	7.7%
Swimming	11.1%	Tennis	7.1%	Unihockey	6.0%
Karate	7.1%	Athletics	6.6%	Karate	4.4%
Judo	5.1%	Judo	4.9%	Gymnastics	3.8%
		Unihockey	4.9%	Handball	3.8%

Girls (n=436)					
5–7 years		8–10 years		11–13 years	
Gymnastics	31.6%	Gymnastics	16.5%	Sports dance	18.7%
Gymnastics and dancing	18.4%	Sports dance	9.1%	Gymnastics	14.0%
Sports dance	17.3%	Apparatus gymnastics	9.1%	Horse riding	9.9%
Swimming	8.2%	Gymnastics and dancing	8.5%	Football	7.0%
Tennis	5.1%	Athletics	7.9%	Apparatus gymnastics	4.7%
				Tennis	4.7%

Table 1: Most frequently named main sport disciplines by gender and age

(if parent member: 82.5%; if parent non-member: 65.8%; $n=581$; $p=0.000$) and in all ages (*see figure 1*).

For children active in a sport club, the number of training hours was not related to the parent's physical activity level (if parent active: 3.0 h/week; if parent inactive: 3.0 h/week; $n=873$; $p=0.92$). A relationship with the parent's membership in a sport club was observed (if parent member: 3.2 h/week; if parent non-member: 2.8 h/week; $n=873$), but it did not quite reach the level of statistical significance ($p=0.061$).

There was a significant association between the socioeconomic status of households and children's participation in a sport club. While 61.5% of the children living in a household in the lowest quintile of the adjusted household income were members in a sport club, the corresponding proportion was 78.5% for children living in a household in the highest quintile ($p=0.001$). This association was very similar for both genders, though not significant for girls (boys: 59.0% versus 77.1%, $p=0.011$; girls: 64.2 versus 79.8%, $p=0.131$).

The association between the educational level of the responding parent and the child's participation in a sport club was also significant, but rather weak: The proportion of children active in a sport club was 63.9%, 71.4% and 75.5% if the reporting parent's highest education was compulsory school, upper secondary education, and higher education, respectively ($p=0.036$). Though reflecting the same pattern for both genders, the associations were not significant (boys: 63.3%, 71.4%, 74.5%, $p=0.232$; girls: 64.4%, 71.5%, 76.6%; $p=0.146$).

For children active in a sport club, the number of training hours was not associated with their socioeconomic environment (results not reported).

Conclusions

For Swiss children from the age of 5 to 13 years, the Swiss Household Panel 2007 provides the first nationwide estimates for membership in clubs and similar organisations and for their main sport disciplines. They show that a majority of children are members in a sport club already at the beginning of school age and that this percentage continues to rise until the age of about ten years. Using a broad definition of sport club membership ("sports club, dance

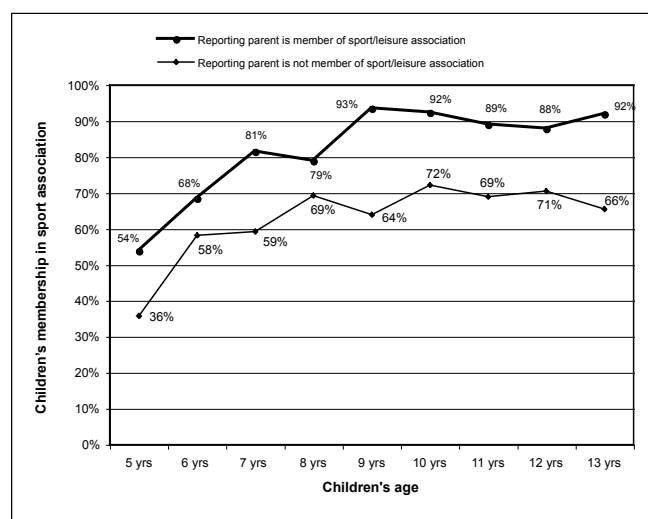


Figure 1: Proportion of children active in a sports club by age and reporting parents' membership in a sport or leisure association (n=1207)

school, or any other kind of association dealing with movement and physical culture"), no differences were observed between boys and girls.

The representative survey "Sport Switzerland 2008" carried out in 2007 (Lamprecht et al., 2008) has provided the first estimates on sports participation in Swiss children from 10 to 14 years of age, based on telephone interviews with 1530 children. The proportion of boys reporting membership in a sports club was 69%, the proportion of girls 55%. Though there were some methodological differences, the top 5 sports from the 11 to 13 year old boys and girls in the Swiss Household Panel were all found within the top 10 sports cited in "Sport Switzerland 2008". The main difference was that in girls dancing activities and horse riding were named considerably less frequently in "Sport Switzerland 2008". Taking into account that these activities are often carried out in settings that do not meet the strict criteria for sport clubs applied in the sport survey, these results indicate a remarkable consistency between both studies.

The relationship between the reporting parents' own physical activity and sport club membership and the activities of their children within sport clubs and similar organisations highlights the importance of parents' roles also for physical activity behaviour. This is further supported by the association between household socioeconomic status and the children's involvement in organised physical activities. Further exploration of these relationships, using more detailed assessments of physical activity behaviour and further information on both parents, may provide a better understand-

ing of the underlying mechanisms and possibilities for successful interventions in physical activity and sport promotion in children.

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References

- Armstrong N., Welsman J.R. (2006): The physical activity patterns of European youth with reference to methods of assessment. *Sports Med.* 36(12): 1067–86.
- Bundesamt für Gesundheit BAG (2008): Nationales Programm Ernährung und Bewegung 2008–2012 (NPEB 2008–2012). Bundesamt für Gesundheit, Bern.
- Lamprecht M., Fischer A., Stamm H.P. (2008): Sport Schweiz 2008. Kinder- und Jugendbericht. Bundesamt für Sport, Magglingen.
- Riddoch C.J., Andersen L.B., Wedderkopp N., Harro M., Klasson-Heggebø L., Sardinha L.B., Cooper A.R., Ekelund U. (2004): Physical activity levels and patterns of 9- and 15-yr-old European children. *Med. Sci. Sports Exerc.* 36(1): 86–92.
- Sallis J.F., Prochaska J.J., Taylor W.C. (2000): A review of correlates of physical activity of children and adolescents. *Med. Sci. Sports Exerc.* 32(5): 963–75.
- Taylor R.W., Murdoch L., Carter P., Gerrard D.F., Williams S.M., Taylor B.J. (2009): Longitudinal study of physical activity and inactivity in preschoolers: the FLAME study. *Med. Sci. Sports Exerc.* 41(1): 96–102.
- Wagner A., Klein-Platat C., Arveiler D., Haan M.C., Schlienger J.L., Simon C. (2004): Parent-child physical activity relationships in 12-year old French students do not depend on family socioeconomic status. *Diabetes Metab.* 30(4): 359–66.
- Zimmermann E., Tillmann R. (2004): Vivre en Suisse 1999–2000. Une année dans la vie des ménages et familles en Suisse. Peter Lang, Bern.
- Zimmermann-Sloutskis D., Zimmermann E. (2008): Globally evaluated physical activity, participation and training hours in sports clubs, and body weight of children from 5 to 13 years of age – First results from the Swiss Household Panel (SHP) 2007. *Epidemiology and Biostatistics*, Geneva.
- Ziviani J., Macdonald D., Ward H., Jenkins D., Rodger S. (2008): Physical activity of young children: a two-year follow-up. *Phys. Occup. Ther. Pediatr.* 28(1): 25–39.